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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

LUGO, D

ART UNIT

PAPER NUMBER

2634

DATE MAILED:

11/07/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/204,370

Applicant(s)

ATARIUS ET AL.

Examiner

David B. Lugo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☒ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 1998 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 8/31/99 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

A copy of European Patent 0 757 175 has not been furnished. However, European Patent 0 858 175 has been furnished, but is not listed on Form PTO-1449. It appears that foreign patent document 0 858 175 should be listed in place of 0 757 175.

Appropriate correction is required.

Drawings

2. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 333 in FIG. 3; and 601, 602, and 603 in FIG. 5. Correction is required.

4. The drawings are objected to because there should be some logical connection between step 742 and step 730 (stage three) instructing stage three to use paths from stage two until new paths are ready from stage one when the quality of the output signal is less than an acceptable level as described in page 9 lines 15-21 of the specification. If there should be no connection, the specification should be corrected accordingly. Correction is required.

Specification

5. The specification is objected to as follows:
- a. Page 2, line 2, "composite signal 58" should be ... "composite signal 57"....
 - b. Page 4, line 3, "finger 322" should be ... "finger 332"....

Appropriate correction is required.

Claim Objections

6. Claims 1-13, 15, 20, and 21 are objected to because of the following informalities:
- a. Variable N, first referenced in claim 1, variable M, first referenced in claims 2, 15, and 20, and variable k, first referenced in claim 20, are not clearly defined. Please clearly specify the parameters of the variables such as their range, whether N, M, and k are integers or whole numbers, etc.
 - b. Claim 2, line 1, "to us an input" should be ---"to use an input"---.
 - c. Claim 3, line 1, "configures to use" should be ---"configured to use"---.
 - d. Claim 7, line 2, "new N set of paths" should be ---"new set of N paths"---.

Appropriate correction is required.

7. Claim 25 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The step of updating the second set of paths while updating the first set of paths contradicts the step of updating the second set of paths without updating the first set of paths as stated in parent claim 23.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 5-7 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 5 states that the second stage is configured to use the input signal to generate a new set of N paths. However, parent claim, claim 1, states that the second stage is configured to use the set of more than N paths to generate a set of N paths. The specification does not recite exactly how the second stage will use the input signal to generate a new set of N paths as the set of N paths was only described to be generated from the set of more than N paths produced by the first stage. Further, if the second stage is using the input signal to generate a new set of N paths, it is unclear how it can still be configured to use the set of more than N paths from stage one to generate the N paths as stated in claim 1. The use of both the input signal and the first set of more than N paths by the second stage to generate N paths and a new set of N paths imply that there are two sets of N paths being generated simultaneously.

Regarding claims 6 and 7, it is unclear how the second stage is using the input signal to generate a new set of N paths while also using the set of more than N paths produced by stage one to select and derive a new set of N paths as stated in claims 6 and 7, respectively.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claim 1 recites the limitation "the first set of more than N paths" in line 5. There is insufficient antecedent basis for this limitation in the claim. Please note that claim 8, dependent on claim 1, also cites the limitation "the first set of more than N paths" in line 2. If claim 1 is amended and does not recite a first set of more than N paths, claim 8 will be rejected for having insufficient antecedent basis for the limitation stated in line 2.

13. Claim 4 recites the limitation "the second set of paths" in line 2. There is insufficient antecedent basis for this limitation in the claim.

14. Claim 12 recites the limitation "the new set of more than N paths" in the last two lines of the claim. There is insufficient antecedent basis for this limitation in the claim. Parent claim, claim 11, recites the limitation "a new first set of candidate paths" in line 2. It appears that this limitation should be replaced with "a new set of more than N paths" in order to overcome the rejection stated above.

15. Claim 13 recites the limitation "the quality signal" in the last two lines of the claim. There is insufficient antecedent basis for this limitation in the claim. It appears that "the quality signal" should be "the counter" in order to overcome the rejection stated above.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

17. Claims 1, 2, 11, 12, 14, 15, 19, 22, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by He U.S. Patent 5,987,016.

Regarding claims 1, 14, and 19, He describes an apparatus for configuring a RAKE receiver having four fingers ($N=4$), comprising a first stage, or searcher 407, that identifies the sixteen strongest received multipath signals, or candidate paths, of an input signal (16 being a set of more than N paths), and uses outputs 408 to send information about those signals to a second stage, or finger manager 409, considered to be a selector, as shown in FIG. 4. The finger manager then uses the sixteen candidate paths derived from the input signal and selected by the searcher to select a subset, or smaller set of candidate paths for assignment to the RAKE receiver fingers (see col. 1 line 56 to col. 2 line 10). The selected paths are used to configure the fingers of the RAKE receiver in a third stage that uses the N paths in fingers F1, F2, F3, and F4, to produce an estimate of the transmitted signal through combiner 450, as shown in FIG. 4 (see col. 1 line 56 to col. 2 line 10, col. 5 line 16 to col. 6 line 56, FIG. 4).

Regarding claims 2 and 15, He speaks of the use of correlation energies in the selection of the N paths, or subset of candidate paths, from the set of more than N paths, or set of candidate paths, in column 5 lines 39-53. It is inherent that some M number of correlators were

used to derive these correlation energies and generate the set of N paths, or subset of candidate paths, from the outputs of the M correlators (see column 5 lines 39-57).

Regarding claims 11 and 12, He describes the searcher outputting the strongest received multipath signals as determined by a preselected output threshold in column 5 lines 51-54. Thus, there is a quality signal alerting the searcher when new sets of multipath signals must be output as determined by the output threshold. It is inherent that the third stage will continue to use paths from the second stage until new paths become available.

Regarding claims 22 and 24, He describes a method for configuring a RAKE receiver comprising the steps of a searcher locking onto received signals at a plurality of time offsets producing a first set of paths as described in column 5 lines 31-38. The searcher then uses that first set of paths to generate a set of Walsh correlation energies or values, as described in column 5 lines 39-53. A finger manager then uses those correlation values to select the paths to be used in the assignment of the RAKE receiver fingers as described in column 5 lines 53-57 (see col. 5 lines 27-57). It is inherent that the second set of paths can be updated while updating the first set of paths.

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 13, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over He.

Regarding claim 13, He describes an apparatus for configuring a RAKE receiver with N fingers as described in paragraph 17 above.

He does not disclose the use of a counter with the first stage of the RAKE receiver configured to generate a new set of more than N paths when said counter is greater than a pre-set value. However, it would have been obvious to one of ordinary skill in the art to employ the use of a counter so the first stage can be alerted after a certain amount of time has elapsed that the paths being selected are to be updated due to the dynamic nature of the incoming signals.

Regarding claims 23 and 25, He describes a method for configuring a RAKE receiver as described above.

He does not expressly disclose the ability of the receiver to generate the second set of paths without updating the first set of paths and while updating the first set of paths.

It would be obvious to one of ordinary skill in the art to allow the second stage to generate a new set of paths while the first stage is inactive so power usually consumed while updating the first set of paths may be conserved. Further, it is inherent that the second set of paths can be updated while updating the first set of paths.

20. Claims 3, 4, 8-10, 16-18, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over He in view of Tran U.S. Patent 6,269,075.

He describes an apparatus for configuring a RAKE receiver with N fingers as described in paragraph 17 above.

Regarding claims 3, 4, 20, and 21, He does not expressly disclose the use of $3 \times M$ or $k \times M$ correlators in the second stage to generate the set of N paths, or smaller set of candidate paths.

Tran discloses the use of correlators that produce measurements taken at a candidate path, $M(0)$, and at adjacent timing offsets (i.e., $M(-1)$ and $M(1)$ taken before and after $M(0)$, respectively), in column 8 lines 40-52. Thus, there are 3 correlators for each candidate path, providing $3*M$ or $k*M$ correlators for a set of M paths, where k is equal to 3 in this example. As Tran further recites in column 8 lines 21-23, these correlation measurements are used to estimate the peak path location to be used in the finger assignment. Thus, 3 or k correlators are used to estimate one peak path location, and $3*M$ or $k*M$ correlators are used to provide M estimates. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the M estimates provided by the $3*M$ or $k*M$ correlators described by Tran to generate the set of N paths, or smaller set of candidate paths, in the finger manager of He so the finger assignment can be improved by reducing timing misalignment as recited by Tran in column 8 lines 7-23 (see Tran col. 8 line 7 to col. 9 line 33).

Regarding claims 8, 10, 16, and 18, He does not disclose the use of a searcher to generate a first set of paths through the output of a matched filter, and the ability of a selector to generate a new set of N paths, or subset of paths, while the searcher is active generating a new set of paths.

Tran discloses the use of a matched filter 32 in the processing of an input signal received by a RAKE receiver as described in column 5 lines 14-42 and column 6 lines 53-57, and as shown in FIG. 1. It is inherent that the selector can generate a new set of N paths while the first stage is searching for more candidate paths. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a matched filter as described by Tran in the RAKE receiver of He because the matched filter helps reject out-of-band interference and noise

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and also matches the pulse shape of the transmitted signal for optimal performance as recited by Tran in column 6 lines 53-57 (see Tran, col. 5 lines 14-42, col. 6 lines 53-57, FIG. 1).

Regarding claims 9 and 17, He does not expressly disclose the ability of the second stage to generate a new set of N paths, or candidate paths, while the first stage is inactive, said first stage configured to use an output of a matched filter to generate a first set of paths.

Tran discloses the use of a matched filter in the processing of an input signal as described above. It would be obvious to one of ordinary skill to use the RAKE receiver of He comprising the matched filter described by Tran as described above, and allow the second stage to generate a new set of paths while the first stage is inactive so power usually consumed by the matched filter may be conserved.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wang U.S. Patent 6,125,137 discloses a RAKE receiver with N fingers and M time offsets used to configure the N fingers of the RAKE receiver.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David Lugo** whose telephone number is **(703) 305-0954**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

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Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231


or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

dl
10/24/01


STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600